

### **REMARKS**

Claims 1-15, 17, 18 and 20-30 are currently pending in the subject application and are presently under consideration. In the present response, Applicants amend claims 1-3, 7, 8, 13, 15, 17, 18, and 20-23, 25, 26, and 29, cancel claims 4-6, 9-12, 14, 24, 27, 28, and 30, and traverse the rejections as follows.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

### **Telephonic Conference - September 22, 2009**

Applicants' attorney would like thank the Examiner for a telephonic conference conducted on Tuesday, September 22, 2009. In that discussion, it was agreed that Kim et. al., in column 5, lines 49-60 and column 6, lines 11-15, does not teach or suggest two transmitter terminals, each encoding a data signal using a same long code, polarizing each signal with a different polarization, and transmitting the long-encoded, polarized signals to a receiver. Similarly, it was agreed that Kim et al. fails to teach a receiver that receives two long-encoded, polarized signals, separates the two signals based on their polarization, and then applies the same long code to each signal to decode the data.

Some discussion was focused on the "odd" and "even" signals found in Kim et al., Figure 6, emanating from S/P converter 613. Although neither the Examiner nor Applicants' attorney could understand what those signals represented, upon further review, Applicants' attorney has determined that they are simply "I" and "Q" channels found in any typical quadrature-phased keying transmitter (*see Kim et al., column 2, lines 18-20*). They do not represent Applicants' recited "first and second long-encoded, polarized signals".

### **I. Rejection of Claims 1-14 Under 35 U.S.C. §101**

Claims 1-14 were rejected under 35 U.S.C. §101 as allegedly not falling within one of the four statutory categories of invention. It was alleged that the present claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. It was further alleged that claims 1 and 8 recite language that is broad enough that the claim could be completely performed mentally, verbally, or without a machine. Applicants respectfully disagree.

A statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing (In Re Bilski, 88 USPQ2d 1385). Applicants believe that claims 1-14 all recite language that ties them to a particular machine. For example, claim 1, as amended, recites:

- a) "generating first data to be transmitted from a first transmission terminal"
- b) "encoding the first data with a long code at the first terminal..."
- c) "applying a first polarization to the first long-encoded signal..."
- d) "generating second data to be transmitted from a second transmission terminal"
- e) "encoding the second data with the long code at the second terminal..."
- f) "applying a second polarization to the second long-encoded signal..."
- g) "transmitting the first and second long-encoded, polarized signals..."

Each of the above features in claim 1 is tied to a particular machine by the simple nature of each step. For example, "generating first data..." is explicitly tied to a transmission terminal. "Encoding the first (second) data with a long code..." is implicitly tied to electronic devices well known in the telecommunication arts for encoding data, such as oscillators, mixers, shift-registers, etc. "Applying a first (second) polarization..." is implicitly tied to well-known electronic devices for performing polarization on electronic signals. Finally, the act of "transmitting..." cannot be construed in any way other than an electronic device for transmitting information. Applicants assert that claim 8, likewise, comprises acts that are either explicitly or implicitly tied to a particular machine.

Importantly, *none of the above acts can be performed mentally, verbally, or without a machine*. All of the acts recited in Applicants' claimed subject matter require the use of electronic components well-known to those skilled in the telecommunication arts. Therefore, Applicants respectfully request that the rejection to claims 1-14 be withdrawn.

Applicants also believe that claims 1-14 are allowable because they "transform underlying subject matter" in accordance with the holding of *In Re Bilski*. In Applicants' claims drawn to a transmitter, *data* is transformed via a modulation technique involving long code encoding and polarization, into a *polarized, modulated waveform* and then transmitted over the air to a receiver. In Applicants' claims drawn to a receiver, *polarized, modulated waveforms* are separated from each other based on their polarizations, then decoded into *data* using the same

long code for each separated path. Applicants assert that the transformation of data into a modulated waveform and vice-versa meets the requirements contemplated by the *Bilski* decision.

Applicants would like to, additionally, bring to the Examiner's attention a recent BPAI decision dated July 9, 2009 (*In re Dickerson*, Appeal No. 2009-001172). In that decision, the board found:

“We find that claims 23, 29, and 30 recite a computerized method which includes a step of outputting information from a computer (FF 7 and 9-10) and therefore, are tied to a particular machine or apparatus.”

In this decision, the board found that simply outputting data from a computer was enough for the claim to be "tied to a particular machine". Similarly, Applicants' claims are tied to a particular machine by virtue of, in claim 1, "...transmitting the first and second long-encoded, polarized signals from the first and second transmission terminals, respectively, to at least one destination" and in claim 8, "applying a long code to the first and second long-encoded communication signals *to produce* first and second decoded signals" (emphasis added). In both cases, a signal is being transmitted or produced that is tied to a particular machine.

## **II. Rejection of Claims 1, 5-8, 12-14, 18, 20, 21, 24-26, 29 and 30 Under 35 U.S.C. §102(e)**

Claims 1, 5-8, 12-14, 18, 20, 21, 24-26, 29 and 30 were rejected under 35 U.S.C. §102(e) as being anticipated by Kim et al. (US 7,072,324). Claims 5, 12, 14, 24, and 30 have been canceled, rendering the rejection moot.

### **Claims 1 and 21**

Regarding claims 1 and 21, it was alleged that Kim et al. teaches "encoding both first and second nominally orthogonal polarization signals with a same long code..." in column 5, lines 49-60 and in column 6, lines 11-15. Applicants do not believe that Kim et al. teaches the features of claims 1 and 21, either in their original or now amended form. Specifically, Applicants do not believe that Kim et al. teaches any of the claimed features, including:

a) Encoding first data with a long code at a first terminal and encoding second data with the same long code at a second terminal

- b) Applying a first polarization to the first long-encoded signal
- c) Applying a second polarization to the second long-encoded signal
- d) Transmitting the first and second long-encoded, polarized signals from the first and second terminals, respectively, to at least one destination..

The citation from Kim et al. teaches a single transmitter comprising a signal mapper 611, a S/P converter 613, multipliers 615 and 617, and a p/n spreader 619 and illustrated in Figure 6:

"Referring to FIG. 6, a signal mapper 611 receives a signal resulting from combining encoded user data with a long code whereby the long code changes the level of the received signal by converting 0s and 1s to +1s and -1s, respectively. An S/P converter 613, coupled to the signal mapper output, converts a serial signal received from the signal mapper 611 to an odd-numbered signal and an even-numbered signal. A multiplier 615, coupled to the even output of the S/P converter, multiplies the even-numbered signal by an orthogonal code  $W_m$ . A multiplier 617, coupled to the odd output of the S/P converter, multiplies the odd-numbered signal by an orthogonal code  $W_m$ ." (*Kim et al.*, col. 5, lines 49-60)

From the above paragraph, the signal mapper receives data from a user where the voltage level of the data has been changed by applying a "long code" that converts the voltage level from 0s and 1s to +1s and -1s. Then, S/P converter 613 converts the output of mapper 611 to "odd" and "even" numbered signals (taken to mean I and Q streams - see *Kim et al.*, column 2, lines 17-20). Each data stream is then modulated by the same Walsh code (different than a long code) using multipliers 615/617.

The above excerpt from Kim et al. fails to teach *any* of the elements of Applicants' claimed subject matter. It fails to teach encoding data at two different terminals using the same long code, fails to teach applying first and second polarizations to each of the signals, respectively, and fails to teach transmitting the signals from two terminals to a destination.

With regard to column 6, lines 11-15, it was alleged that this further describes the process recited in Kim et al., column 5, lines 49-60 and that it teaches "encoding both first and second nominally orthogonal polarization signals with a same long code". This passage from Kim et al. is a continuation of the discussion of the transmitter in Figure 6 and describes a switch 621 and a controller 600 and how the controller operates switch 621 to route signals from the P/N spreader 619 to two pairs of low-pass filters 623/625 and 627/629. Applicants assert that the

description of a switch and a controller in no way equates to encoding signals using the same long code, polarizing the signals, and then transmitting the signals to a destination.

For the above reasons, Applicants respectfully request that the rejection to claims 1 and 21 be withdrawn.

#### **Claims 8 and 26**

With regard to claims 8 and 26, it was alleged that Kim et al. teaches all of the features of these claims in column 5, lines 49-60, column 6, lines 11-15, and in column 8, lines 44-50. Applicants respectfully disagree.

Applicants assert that the cited sections from Kim et al. fail to teach any of the features of claims 8 or 26. Claims 8 and 26 are directed towards a receiver, while the cited sections from Kim et al. describe a transmitter. Kim et al. does, however, teach a receiver in Figure 13, described in part in column 8, lines 44-50. In this passage, Kim et al. teaches a pilot channel receiver 1310 that receives an input signal and applies p/n despreading (reference 1311) to the signal. The de-spread signal is then provided to multiplier 1313, which applies an orthogonal code to decode the signal. The orthogonal code is the same one used by the transmitter to encode the signal.

Nowhere in the cited passage does Kim et al. teach receiving two, long-encoded, polarized signals, as recited in claims 8 and 26. Nowhere in the cited passage does Kim et al. teach separating the two long-encoded, polarized signals from each other in accordance with their respective polarizations. Finally, there is no teaching in this passage that describes applying the same long code to each of the separated signals. In short, Kim et al. fails to teach any of the features of Applicants' claimed subject matter. Therefore, Applicants respectfully request that the rejections to claims 8 and 26 be withdrawn.

#### **Claims 18 and 20**

With respect to claims 18 and 20, it was alleged that Kim et al. teaches all of the features of these claims in column 5, lines 49-60, column 6, lines 11-15, and in column 8, lines 44-50. These independent claims are apparatus claims that incorporated the methods of claims 1 and 8, respectively. However, Applicants have amended these claims to stand on their own, rather than rely on the respective, underlying method claims. They each comprise features that have been previously discussed, above, with reference to Kim et al. Applicants believe these claims are

allowable as they have the same or similar features found in claims 1 and 8, which Applicants have explained, above, to be allowable claims. Therefore, Applicants respectfully request that the rejection to these claims be withdrawn as well.

### **Claims 7 and 25**

Applicants believe that claims 7 and 25 are allowable as being dependent upon allowable claims, namely claims 1 and 21. Therefore, Applicants respectfully request that the rejection to these claims be withdrawn.

### **III. Rejection of Claims 2-4, 9-11, 22-23 and 27-28 Under 35 U.S.C. §103(a)**

Claims 2-4, 9-11, 22-23 and 27-28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kim et al. (US 7,072,324) in view of Hwang et al. (US 2002/0115473 A1). All of these claims have either been canceled or are dependent upon independent claims that Applicants believe to be allowable. Therefore, claims 2, 3, 22, and 23 are believed to be in condition for allowance as depending on what Applicants to be allowable claims.

### **IV. Rejection of Claims 15 and 17 Under 35 U.S.C. §103(a)**

Claims 15 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kim et al. (US 7,072,324). It was alleged that Kim et al., plus knowledge generally known by those skilled in the art, obviates these claims.

Applicants note that claims 15 and 17 are Beauregard claims and that they comprise the same or similar features to independent claims 1 and 8, respectively. As stated previously with respect to those rejections, Applicants do not believe that Kim et al. teaches any of the features found therein. Therefore, Applicants assert that even if one were to combine the teachings of Kim et al. with knowledge generally known by those skilled in the art, the resulting combination still would not teach each and every element of Applicants' claimed subject matter. Therefore, Applicants respectfully request that the rejection to 15 and 17 be withdrawn.

**CONCLUSION**

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [QUALP825US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,  
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